

A recent research on the effects of central bank balance sheet policies

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Central bank balance sheet policies are among the most popular stabilization policy tools but are still poorly understood theoretically and empirically. A new study by Bocconi University, Milan, professors Luigi Iovino and Dmitriy Sergeyev published in *The Review of Economic Studies* shows that such balance sheet policies are effective if investors behave according to a plausible alternative behavioral assumption to the demanding requirement of rational expectations.

Central bank balance sheet policies include quantitative easing and foreign exchange interventions. They are often pursued by central banks in response to specific economic events. Quantitative easing (QE), for example, is a balance sheet policy in which the central bank purchases [financial assets](#) in order to increase the monetary supply and energize the economy and can be pursued with the intent of helping to bring the economy out of a recession.

Although balance sheet policies are common, it is unclear whether they are actually effective. Empirically, it is difficult to identify the causal effect of these policies. This is because they are usually implemented in response to a specific event, such as the use of QE in response to a recession—which makes it challenging to disentangle the effects of the policy from the effects of the event that motivated the policy in the first place.

Theoretically, a standard class of macroeconomic models predicts balance sheet policies to be in general irrelevant. This is because these models assume investors have rational expectations, which implies they anticipate all future contingencies of any given policy. Under rational expectations, investors correctly forecast how the government and other investors will respond to an intervention.

Suppose that a central bank engages the balance sheet intervention of purchasing private risky assets and in exchange creates reserves or sells short-term public bonds. The investor under rational expectations understands that any gains or losses to the central bank's portfolio will eventually be transferred indirectly back to it through taxes.

As a result, it is as if the central bank had increased the riskiness of the portfolio of each investor. Investors then respond by reducing their individual demand for risky assets in order to hedge against the new tax risk. But since investors also correctly forecast the actions of other

investors, each investor believes every other investor is also going to decrease their total demand for risky assets in a way that exactly compensates the action of the central bank. Thus, each investor anticipates that, following the balance sheet policy, future asset prices will be unaffected. Current asset prices then remain the same and the policy is rendered irrelevant.

The puzzle is that although standard theory predicts this irrelevance, [central banks](#) do use balance sheet policies. The new paper by professors Iovino and Sergeyev helps understand this puzzle by demonstrating that under an alternative plausible representation of how investors reason, central bank balance sheet policies are effective. Instead of rational expectations, the authors assume level-k thinking: investors form higher-order beliefs about the behaviors of others only up to some finite level k.

While in rational expectations investors forecast the behavior of others perfectly, in level-k thinking different investors can have varying levels of limited sophistication about how they update their beliefs after a balance sheet intervention. Level-1 thinkers observe the intervention but do not update their expectations about future variables affected by the policy, such as taxes. Then, level-2 thinkers do update their expectations about variables affected by the policy but do so under the belief that all other investors are level-1 thinkers: thus the change in belief of level-2 thinkers will not match the change they would have under rational expectations. And so on and so on.

Level-k thinking breaks away with the demanding assumption of rational expectations that all people anticipate all future contingencies of a policy change and at the same time allows agents to have varying degrees of sophistication about how they predict the actions of others. The authors find that if we model investors as having such varying degrees of level-k thinking, as opposed to rational expectations, then [central bank](#) balance sheet policies are effective. Moreover, Professors Iovino and Sergeyev

find empirical support for this model.

Beyond this important result which grounds the effectiveness of balance sheet policies, the authors also characterize how the ability of balance sheet policies to stimulate aggregate output depends on the interplay between [investors](#)' attitudes toward risk and the risk-return characteristics of the assets involved in the [policy](#). This characterization brings attention to potential unintended consequences of balance sheet policies. In particular, Professor Sergeyev highlights that purchases of long-term public debt may potentially harm aggregate output.

More information: Luigi Iovino et al, Central Bank Balance Sheet Policies Without Rational Expectations, *The Review of Economic Studies* (2023). [DOI: 10.1093/restud/rdad010](https://doi.org/10.1093/restud/rdad010)

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